



## Effectiveness of Kinesio Taping in Hemiplegic Shoulder Pain- A Literature Review

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### ABSTRACT :

**Background:** This review critically examines the current literature on the effectiveness of KT Taping for managing hemiplegic shoulder pain in stroke survivors. The goal is to provide evidence-based insights that can help develop more targeted and effective treatment interventions, which may reduce pain, improve range of motion, and enhance functional outcomes.

**Methods:** The PubMed, Google Scholar, Cochrane, and Science direct database was searched for published papers from 2014 to 2024. We evaluated the effectiveness of KT Taping for hemiplegic shoulder pain, focusing on improving the range of motion, reducing pain, and enhancing functional outcomes in stroke survivors.

**Results:** A review of studies from 2014 to 2024 highlights the effectiveness of Kinesio Taping in addressing hemiplegic shoulder pain in post-stroke patients. Kinesio Taping relieves pain, enhances stability, and helps prevent shoulder subluxation, which is common in hemiplegia. This technique improves range of motion and functional recovery when used alongside conventional physiotherapy. By supporting neuromuscular function, Kinesio Taping not only reduces disability but also promotes greater participation in rehabilitation, making it a valuable tool in the management of hemiplegic shoulder pain.

**Conclusion.:** Kinesio Taping emerges as a promising, non-invasive strategy in post-stroke shoulder rehabilitation. It contributes to pain reduction and improved upper extremity function. However, research gaps remain in terms of standardized application techniques, treatment duration, and long-term effectiveness. High-quality randomized controlled trials with larger sample sizes and extended follow-up periods are necessary to confirm its long-term benefits and refine clinical guidelines

**Keywords:** kinesio taping, hemiplegic shoulder pain, stroke rehabilitation, upper limb function

### Introduction:

Stroke remains a leading global health concern, with an incidence rate in India ranging from 108 to 172 per 100,000 individuals. According to the World Health Organization, stroke is defined as a sudden onset of neurological dysfunction caused by an interruption of cerebral blood flow, either ischemic or hemorrhagic in nature. It is a major cause of long-term disability, and clinical manifestations often include weakness, numbness, impaired speech, vision problems, and severe headaches.<sup>1</sup>

Among the most disabling sequelae of stroke is impaired upper limb function, particularly hemiplegic shoulder pain (HSP), which affects approximately 12% to 49% of stroke survivors, most commonly within the first three months post-incident. HSP significantly hampers rehabilitation progress by limiting active participation in therapy, delaying motor recovery, and decreasing the patient's ability to perform daily tasks and engage socially.<sup>2</sup>

One of the primary contributors to HSP is muscular weakness. In post-stroke patients, shoulder muscles often lack the strength to counter gravitational or external forces, leading to instability and pain during movement. Additional causes may include joint subluxation, spasticity, and soft tissue inflammation.<sup>3</sup>

Kinesiology taping, also known as elastic taping, is a relatively recent technique incorporated into physiotherapy protocols. This method involves the application of a flexible, hypoallergenic tape designed to stretch up to 60% of its original length. The therapeutic benefits of kinesio taping stem from its ability to modulate neuromuscular activity, correct biomechanical alignment, alleviate inflammation, and reduce pain. These properties support its clinical utility in treating hemiplegic shoulder pain by facilitating muscle activation, decreasing joint subluxation, and promoting functional recovery.<sup>4</sup>

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## Materials and Methods :

**Study design:** Literature review

**Study setting:** St John's Medical College Hospital, Bangalore

### Study criteria

The eligible studies were required to have the following criteria:

1. Systematic Review, randomized control trial, and meta-analysis studies.
2. Full-text articles published in English from the year 2014-2024.

### Search strategy

This review included studies published between 2014 and 2024. Databases searched included PubMed, Cochrane Library, Google Scholar, and ScienceDirect using the keywords “kinesio taping”, “hemiplegic shoulder pain”, “stroke rehabilitation”, and “upper limb function.” Only randomized controlled trials, systematic reviews, and meta-analyses published in English were considered.

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## REVIEW OF LITERATURE :

### 1. Lin Yang et al. (2017)

This randomized controlled trial confirmed that all patients completed the study successfully, with the taping therapy group showing immediate improvements in pain intensity, subluxation magnitude, and muscle activity on the first day ( $p < 0.05$ ). After 4 weeks, significant in these areas along with active range of motion (AROM) ( $p < 0.05$ ), with marked differences compared to the control group ( $p < 0.05$ ). However, the study has limitations, including specific patient selection criteria, a lack of specialized examinations, a small sample size from a single hospital, and a short treatment duration without long-term follow-up, which may limit the generalizability of the findings to the broader post-stroke population.

### 2 . Yen-Chang et al. (2017)<sup>6</sup>

A randomized trial has provided strong evidence for the effectiveness of Kinesio taping in alleviating hemiplegic shoulder pain in 21 stroke patients within six months of their stroke. The patients were carefully divided into two groups: one group underwent a comprehensive 3-week rehabilitation program that included therapeutic Kinesio taping, while the other group received a sham version of the taping. The findings revealed that those in the Kinesio taping group reported significantly reduced pain levels and notable improvements in shoulder mobility, as indicated by the Shoulder Pain and Disability Index, with a p-value demonstrating strong statistical significance ( $p < 0.05$ ). This study strongly advocates for Kinesio taping as an effective intervention for hemiplegic shoulder pain. However, it is important to consider the study's limitations, such as the small sample size, the focus on short-term outcomes, the absence of long-term follow-up, and ethical issues related to medication monitoring. Additionally, differences in patient selection criteria may have influenced the results, highlighting the necessity for larger studies with longer follow-up periods to validate these promising conclusions.

### 3. Hariharasudhan Ravichandranis et al (2019) <sup>7</sup>

A systematic review of randomized controlled trials (RCTs) was conducted to evaluate the effects of taping on hemiplegic shoulders, focusing on studies published between 2000 and 2017 across four major databases: Google Scholar, CINAHL, PubMed, and Pedro. Each article was rigorously assessed using Lloyd-Smith's hierarchy of evidence and the Quality Assessment of Controlled Intervention Studies tool developed by the National Heart, Lung, and Blood Institute. The review included eight RCTs with a total of 132 participants, all of which were deemed of good quality, indicating a high level of confidence in the outcomes. The analysis demonstrated the significant effectiveness of taping methods in reducing pain and subluxation among stroke survivors, showcasing its potential as a valuable intervention in post-stroke rehabilitation. However, the review noted limitations, including inconsistent outcome measures across studies, a predominance of hemiplegic subjects, and the amalgamation of various taping methods, which may impact the generalizability of the findings.

### 4. Lingxin et al (2021)<sup>8</sup>

In 2021, a cross-sectional study rigorously assessed the efficacy and safety of kinesiology tape for hemiplegic shoulder pain, including 14 high-quality trials with 679 patients. The results compellingly demonstrated that kinesiology tape significantly reduced pain, enhanced range of motion, and decreased the acromion-humeral distance compared to sham controls, while also improving upper extremity motor function. However, there were no notable differences in daily activities or quality of life, and no adverse events were reported. This study confirms the effectiveness of kinesiology tape in pain relief and physical function improvement, yet its impact on daily living and superiority over other treatments requires further investigation. The authors called for more rigorous randomized controlled trials with larger sample sizes to validate these findings.

### 5. Paolo Pillastrini et al (2015)<sup>9</sup>

A randomized controlled trial was conducted to evaluate the effectiveness of neuromuscular taping (NMT) for relieving pain and improving range of motion (ROM) in individuals with painful hemiplegic shoulder (PHS) post-stroke. Thirty-two participants (31% female) were divided into an

experimental group receiving NMT alongside a standard physical therapy program (SPTP) and a control group receiving only SPTP. After four weeks of treatment, results showed significant pain reduction ( $p < 0.001$ ) and improved shoulder flexion and abduction ROM in the experimental group. While the study had limitations—specifically, the lack of functional assessment and utilization of non-validated ROM measurement tools—manual goniometers remain reliable for longitudinal evaluations in clinical practice.

#### 6. Peilin Deng et al (2020)<sup>10</sup>

Deng (2020) conducted a systematic review and meta-analysis titled "Effectiveness of Kinesio Taping for the Management of Hemiplegic Shoulder Pain." The study assessed randomized controlled trials from databases such as MEDLINE, EMBASE, and Web of Science, evaluating kinesio taping's effects on pain management in hemiplegic patients. After screening, nine studies with 424 participants were included. The results indicated that kinesio taping significantly reduced pain, improved upper limb motor function, decreased shoulder subluxation, and enhanced daily living activities. These findings support the effectiveness of kinesio taping in managing hemiplegic shoulder pain and suggest it offers benefits beyond placebo effects.

#### 7. Wei Gong et al (2016)<sup>11</sup>

A randomized control study titled "Effect of Kinesio Taping on Shoulder Pain After Stroke" included 60 patients divided into a treatment group receiving kinesio taping and comprehensive rehabilitation, and a control group receiving only rehabilitation for 4 weeks. Pain intensity was measured using the Visual Analogue Scale (VAS), upper limb function assessed with the simplified Fugl-Meyer motor function score (FMA), and shoulder joint mobility evaluated through range of motion (ROM) tests. Results showed no significant difference in VAS scores before treatment; however, the treatment group had significantly lower VAS scores at 2 and 4 weeks post-treatment, indicating reduced pain. Additionally, the treatment group demonstrated significantly higher FMA scores and improved shoulder mobility (flexion, extension, abduction, internal/external rotation) compared to the control group at the same time points. This indicates that kinesio taping, combined with rehabilitation therapy, leads to greater pain relief and enhanced upper limb function and shoulder mobility.

## RESULTS :

This review confirms the clinical effectiveness of Kinesio taping in alleviating hemiplegic shoulder pain. Evidence indicates that Kinesio taping significantly reduces pain and improves range of motion and functional capacity. When combined with rehabilitation exercises and occupational therapy, Kinesio taping yields superior outcomes. Further high-quality research is needed to optimize treatment protocols and validate sustained benefits.

## DISCUSSION :

Hemiplegic shoulder pain is an established and debilitating consequence of stroke that significantly compromises rehabilitation efforts and severely impacts patients' quality of life. The condition is primarily attributed to muscle spasticity, shoulder joint subluxation, and inflammation, each of which markedly limits mobility and impedes daily activities. This review presents a definitive synthesis of findings from seven meticulously selected articles, including one systematic review, one systematic meta-analysis, and four randomized controlled trials, all sourced from PubMed and Google Scholar. We have intentionally excluded studies published in non-English languages, those lacking full text availability, and those that do not meet established CASP and PEDro score criteria, thereby ensuring the utmost reliability and rigor of our analysis.

Kinesiology taping (KT) emerges as a highly effective adjunct to conventional rehabilitation practices. By enhancing muscle activation through tactile stimulation, KT amplifies bioelectrical activity, resulting in considerable pain reduction and substantial improvements in quality of life. A wealth of studies consistently demonstrate that KT outperforms traditional rehabilitation methods, particularly in improving shoulder function and overall upper limb performance in post-stroke patients.

For example, A study by Lin Yang et al. (2020) reported significant reductions in pain and notable improvements in shoulder function among hemiplegic patients treated with KT. Similarly, a double-blind randomized controlled trial conducted by Yen-Chang Huang et al. (2017) further substantiated the exceptional effectiveness of KT in alleviating pain and enhancing the quality of life for stroke survivors suffering from hemiplegic shoulder pain. Additionally, a systematic review by Hariharasudhan Ravichandran et al. (2018) reinforced KT's efficacy in shoulder management, solidifying its position as a crucial component of comprehensive rehabilitation programs.

These robust findings compel the medical community to prioritize kinesiology taping (KT) as an essential therapeutic intervention for managing hemiplegic shoulder pain and optimizing rehabilitation outcomes for stroke patients. KT may be utilized not merely as an adjunct; it is an indispensable necessity for effective rehabilitation.

## CONCLUSION :

In conclusion, kinesiology taping (KT taping) has emerged as a valuable non-invasive intervention for the management of hemiplegic shoulder pain in adults. It significantly contributes to pain reduction, improves shoulder function, and enhances overall rehabilitation outcomes when applied independently or in conjunction with other therapeutic modalities. The literature supports its integration into standard clinical practice due to its safety, simplicity, and consistent therapeutic benefits. However, despite its demonstrated efficacy, there remains a notable research gap concerning standardized application techniques, optimal duration of use, and long-term sustainability of results. Future large-scale, high-quality randomized controlled trials with

extended follow-up periods are essential to establish uniform clinical guidelines and maximize the therapeutic potential of KT taping in the rehabilitation of hemiplegic shoulder pain. Therapeutic potential of KT taping in the rehabilitation of hemiplegic shoulder pain.

#### CONFLICT OF INTEREST :

The authors declare no conflict of interest related to this study.

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